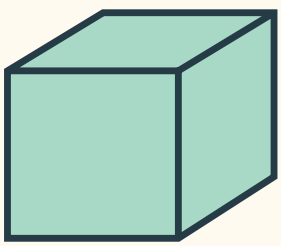
MATHS FIELD GUIDE · GRADE 1

Explore solid shapes

OPENING PROBLEM

Can a face sit flat?



cube

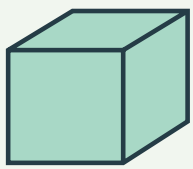
02 Predict how a solid will move
03 Rules and worked cases
04 Pack the shelf
05 Match a solid to its flat print
06 Check your reasoning

ILLUSTRATED PROBLEM SHEET

Predict how a solid will move

A flat face can rest on a table. A curved surface can roll.

1

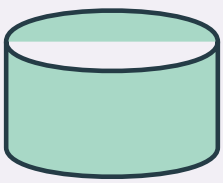


cube

Can a face sit flat?

Yes. Each face is a square. The cube can slide across a flat face.

2

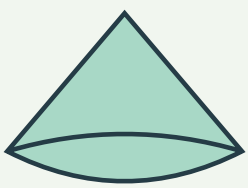


cylinder

How can one solid both stand and roll?

Stand it on a circular end. Lay it on its curved side to roll.

3

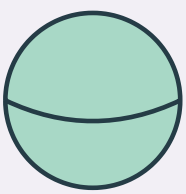


cone

Trace around the base. What shape is left?

A circle. The pointed tip is above the circular base.

4



sphere

Which face can lie flat?

It has no flat face. Its surface curves all around.

Cube balanced on a face
flat contact.

Ball on a tabletop
curved contact.

CHAPTER PROBLEM

Which solid is ball-shaped?

A sphere.

MATHS REFERENCE · GRADE 1

Explore solid shapes

A solid shape takes up space. You can turn it and look around it.

A drawing shows a solid, but the drawing itself is flat.

Four cases to recognise

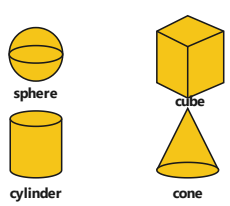
Situation	What to do and why
Trace the base of a cylinder	The outline is a circle. Other parts of the cylinder curve.
Stack two cubes face to face	Flat square faces let the top cube rest evenly.
A cone on its circular base	It can stand still. On its curved side it can roll along a curved path.
A ball seen from above looks round	Turn it and feel around it. A sphere has no flat face.

Read the model

Meet four solids

A sphere is ball-shaped. A cube is box-shaped with six equal square faces.

A cylinder has two flat circular faces and a curved surface. A cone has one flat circular face and a pointed end.

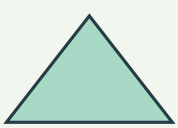


Try rolling and stacking

A curved surface can help a solid roll.

A flat face can help it rest or stack. Use a ball, a box and a closed can with your teacher.

solid A shape that takes up space.
face A flat surface of a solid.
curved surface A surface that bends rather than staying flat.



3 sides

Where does a side end?

At a corner. Three sides meet at three corners.

WORKED INVESTIGATION

Pack the shelf

Put a ball, a tin and a cube-shaped box on a shelf. Look at the parts that touch the shelf before predicting which objects can roll.

Look at this part	What it tells you
Sphere	curved all around
Cylinder	two flat ends and one curved surface
Cube	six flat square faces

Work it through

Stand the tin on an end and it sits flat. Lay it on its curved side and give it a gentle push. The same solid can behave in two ways.

Catch the mistake

A floor mark made by a cube can be square. The mark is flat; the box also has height and can hold things inside.

Compare the cases

Turn the cylinder

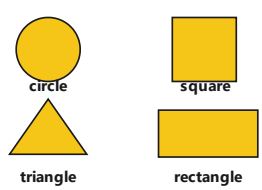
A cylinder can stand on a flat circular face.

Put it on its curved side and it can roll. How you place it matters.

Flat shapes belong to solids

Trace a cube's flat face. You get a square outline.

Trace a cylinder's flat face. You get a circle. A circle and a cylinder are not the same shape.



Change one condition

Turn the cube onto another face. Its outline may look different from the side, but it still has six square faces.

Real objects are models

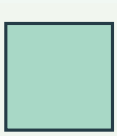
A toy ball is like a sphere. A box may be like a cube.

Not every box is a cube. A cube's square faces are all equal.

Try a shape hunt

Find an object with a flat face and one with a curved surface.

Explain which surface helped you decide. Do not use sharp or open containers.



4 sides

What stays true if the page turns?

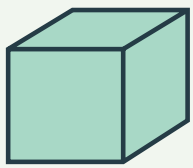
Four equal straight sides and four square corners.

ILLUSTRATED PROBLEM SHEET

Match a solid to its flat print

A print shows the face that touches the paper. A different solid can make the same print.

1

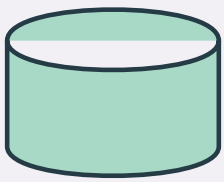


flat face

Which outline can one cube face print?

A square. Turn it to another face and you still get a square.

2

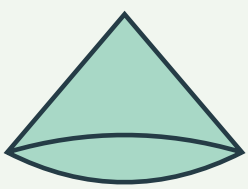


flat end

Stand the cylinder on its flat end. What print appears?

A circle.

3

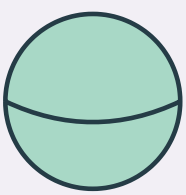


flat base

Can this cone leave the same kind of print as a cylinder?

Yes. Its flat base is also circular.

4



curved

Can the ball rest on a whole flat face like the cube?

No. Its surface is curved all around.

A cylinder end and a cone base
both can print circles.

A cube face and a rectangular box face
can print different outlines.

CHAPTER PROBLEM

Can a cylinder stand and also roll? Explain.

Yes. It can stand on a flat circular face and roll on its curved surface.

QUESTION BANK · FOLD OR COVER THE RIGHT COLUMN

Check your reasoning

Try the problem	Solution and reasoning
01 Does a circular print from a base identify just one solid?	No. A cone and a cylinder can both leave a circle.
02 You see a square print. Does that prove every face of the object is square?	No. You only know about the face that made the print.
03 Is every box a cube?	No. A cube has six equal square faces.
04 I can stand on a flat circular end and roll on my side. Which of the three solids am I? What rules out the ball?	A cylinder. The sphere has no flat circular end to stand on.
05 Which part of a cylinder might leave a rectangular mark when rolled on wet paint?	Its curved side sweeps a strip; a full unrolled side makes a rectangle.
06 Which solid has no corners and only a curved surface: a sphere or a cone?	The sphere. A cone also has a flat end and a tip.
07 Which solid can stand on a flat end and also roll on its side? 	The cylinder on the left. The ball has a curved surface all around.



4 corners

How does this compare with the square?

Both have four square corners. This rectangle has long and short sides.

BANANALEARN LEARNING LIBRARY

Where will your maths take you next?

GRADE 1 MATHS

Choose your next problem.

Explore more illustrated guides and practise a related topic.

Browse Grade 1 guides →

Keep exploring

GRADE 1 · TOPIC GUIDE

A ten is a group of ten ones

Open guide →

GRADE 1 · TOPIC GUIDE

Use ten to help you add

Open guide →

Visit bananalearn.com →